Monitoring the Distribution and Movement of Mine Wastes in Lake Superior

Esteban Chiriboga, Great Lakes Indian Fish and Wildlife Commission

Extensive copper mining throughout the Keweenaw peninsula of Michigan resulted in the deposition of approximately half a billion tons of mine waste along the shores of Lake Superior and its tributaries. These mine wastes, referred to as stamp sands, contain trace metals of sulfide bearing ore that leach into streams and lakes. The concentrations of contaminants related to these stamp sands are above toxicity thresholds for many animal and plant species.

The Great Lakes Indian Fish and Wildlife Commission (GLIFWC) in collaboration with The National Water Research Institute (NWRI) of Environment Canada used an acoustic seabed classification system to map the boundaries of the suitable spawning habitat of the Buffalo Reef area as well as the extent to which stamp sands have advanced into Lake Superior. GLIFWC also conducted expanded spawning assessments to confirm the distribution and pattern of use of Buffalo Reef by spawning lake trout and whitefish. Acoustic classification data collected by the Keweenaw Bay Indian Community will also be presented to illustrate the movement of mine wastes.
The spatial relationship between important spawning sites and areas contaminated by stamp sands were mapped in a GIS environment. The data was be used to develop a preliminary evaluation of the threat to the reef and to provide a baseline for future monitoring. This information can be used as inputs for cumulative impact assessment and as an example of the long term and long range effects of mining contamination.

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